

Partnerships

FEMA Looks to NGA for Disaster Help

By Jessica Rasco and Shawna Wolin

Disaster-response teams of NGA and its predecessor organizations have responded to nearly 50 hurricanes and tropical storms over the last 14 years. The team officially known as the Readiness, Response and Recovery Branch has been bolstered by experience with the four hurricanes that struck Florida in 2004 and Hurricanes Katrina and Rita last year. It continues to stand in the forefront of the disaster-response community with the best available GEOINT products and services to save lives and protect property.

The Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended, enables the Federal Emergency Management Agency (FEMA) to task any federal agency during presidentially declared disasters. Further, an NGA Memorandum of Understanding with FEMA names NGA as its executive agent for geospatial intelligence (GEOINT). Through this agreement, NGA is responsible for the tasking, exploitation, product creation and dissemination of imagery and geospatial products created from the analysis of National Technical Means (NTM) imagery and data. NGA also provides technical expertise in analyzing other imagery data sources, as requested by FEMA.

NGA has integrated classified and unclassified, government and commercial satellite and airborne imagery in its analytical efforts. Commercial imagery has been vital in creating products that can be used in the field to give decision-makers a visual and spatial tool for response and recovery efforts. NTM is valuable for damage assessments. In many disasters, NGA personnel deploy to the disaster scene to provide assistance on site. NGA

also supports FEMA in planning incident management and recovery operations.

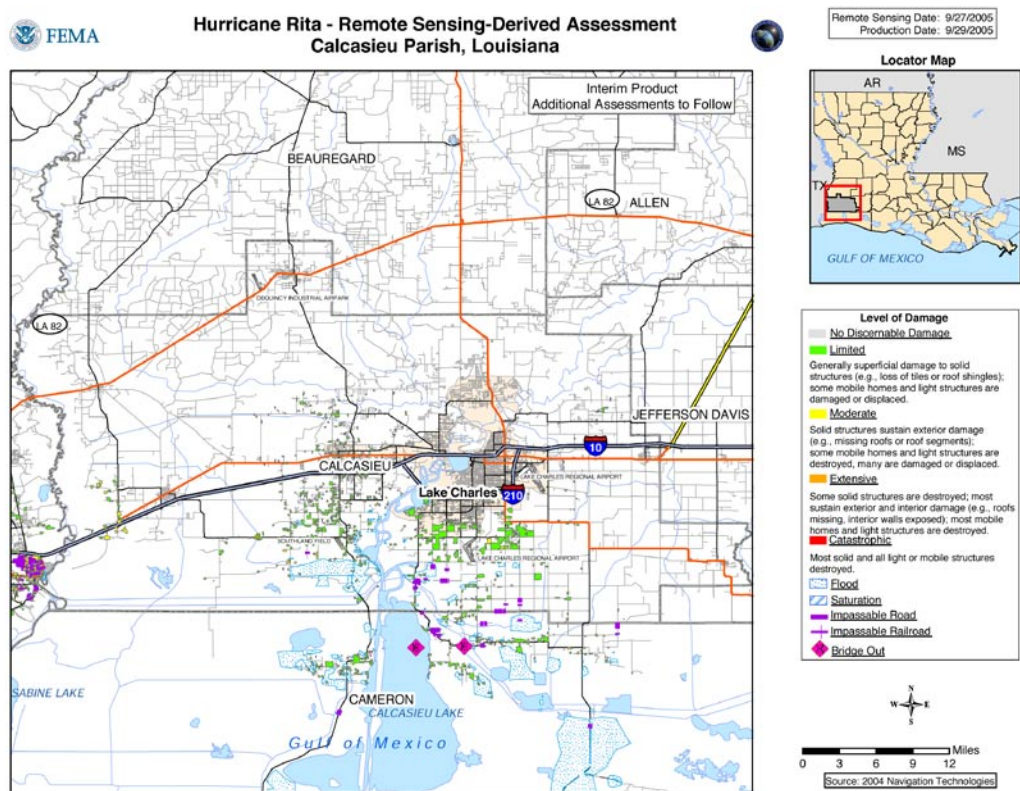
Evolving Partnership

With improvements in technology, the timeliness, accuracy and relevance of the GEOINT provided to disaster responders have improved. In 1992, imagery analysts created film-based products, placing colored dots on population centers to indicate the severity of the damage. These products were hand-carried to FEMA, which created and distributed finished products. By 1994, analysts were transmitting digital files directly using software and workstations that FEMA provided. Cartographers joined the original group of imagery analysts, digitizing their hardcopy maps to assist in creating the files. Human interpretation from classified sources allowed the intelligence to be released at the unclassified level.

NGA and FEMA implemented a new damage classification system in 1997, with standards for wind damage (hurricanes and tornadoes), earthquakes and flooding. These classifications were paired with information such as status of transportation systems and critical transportation facilities. Analysts also began to depict access points for disaster response and recovery.

With improvements in the technology of geographic information systems and the capability to exploit data from analysts' desktops, timelines continued to drop. After the terrorists struck Sept. 11, 2001, the team moved into the newly created North America and Homeland Security Division. Geospatial analysts were added to the team and the group struggled to find

NGA provides FEMA and the disaster-response community with the best available GEOINT products and services, like the Hurricane Rita assessment shown here.



synergy between the tradecrafts. After trying numerous methods, the team began using elevation points to register all sources of imagery with vector information (feature data). After assessing the damage, analysts linked their assessments to the graphic information in easy-to-manipulate *shape files*. The process provided very timely, accurate and streamlined imagery and geospatial analysis when the individual shape files were merged into a single large file.

What's New

Analysts in the Readiness, Response and Recovery Branch are always looking for innovative methods that increase accuracy and timeliness. One new tool is Map Book, an extension of ESRI's ArcGIS software, which allows users to create a template and then pick a specific state or county and "jump" to that location in their map document. This technique has proven to be an efficient way of creating and updating large quantities of maps very quickly.

HURREVAC (Hurricane Evacuation) is another tool that FEMA, NGA and other members of the response community use to track storms as they happen. This tool graphically displays up-to-date data from the National Weather Service. Analysts can track wind speed and extent as well as hurricane tracks (both past and predicted) days in advance of the storm's landfall to facilitate pre-storm analysis. Analysts can also manipulate the data for additional planning such as changing wind speed and direction. NGA has used these tools to create strike-probability maps.

On May 22, 2006, the National Oceanic and Atmospheric Administration announced a very active hurricane season for 2006. NOAA predicted 13 to 16 named storms, with eight to 10 becoming hurricanes, including four to six that could become category 3 or higher. After a record-setting season in 2005, NGA has been very active across the community to prepare for the readiness, response and recovery mission.